SOLAR OBSERVATIONS

SOLAR AND SKY RADIATION MEASUREMENTS DURING DECEMBER, 1926

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For a description of instruments and exposures and an account of the method of obtaining and reducing the measurements, the reader is referred to the REVIEW for January, 1924, **52** : 42, January, 1925, **53** : 29, and July, 1925, **53** : 318.

From Table 1 it is seen that solar radiation intensities averaged slightly above the normal for December at Washington, D. C., and Lincoln, Nebr., and close to normal at Madison, Wis.

Table 2 shows a deficiency for the month at the above-named stations in the amount of radiation received on a horizontal surface from the sun and sky. It also shows a deficiency at these three stations for the year, amounting to 1.7 per cent at Washington, 2.2 per cent at Madison, and 2.8 per cent at Lincoln.

Skylight polarization measurements made on three days at Washington give a mean of 65 per cent, with a maximum of 66 per cent on the 2d. These are slightly above the corresponding average values for December at Washington. No sky polarization measurements were made at Madison, as the ground was covered with snow throughout the month.

TABLE 1.—*Solar radiation intensities during December, 1926*

[Gram-calories per minute per square centimeter of normal surface]

Washington, D. C.

Date	Sun's zenith distance: 8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	*1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Dec. 2	1.78	1.01	1.12	1.25	1.40	1.58	------	1.17	0.99	0.89	1.88
6	1.60	0.98	1.12	1.26	1.42	1.60	------	1.16	1.07	0.96	1.78
14	7.04	------	------	------	------	------	------	0.97	0.83	0.73	3.99
16	1.12	0.85	0.97	1.17	1.35	1.57	------	1.20	------	------	1.07
17	1.88	------	------	------	------	------	------	------	0.99	------	1.88
18	0.81	0.90	1.01	1.16	1.40	------	------	1.19	1.01	0.78	1.78
23	3.45	0.50	0.70	0.85	------	------	------	------	------	------	2.87
29	4.37	------	------	0.87	------	------	------	------	------	------	3.15
30	2.16	0.68	0.84	1.04	1.20	1.38	------	1.04	0.84	0.68	1.96
Means	------	**0.82**	**0.96**	**1.09**	**1.35**	**1.53**	------	**1.12**	**0.96**	**0.81**	------
Departures	------	**+0.04**	**+0.07**	**+0.04**	**+0.12**	------	------	**+0.10**	**+0.06**	**+0.03**	------

* Extrapolated.

TABLE 1.—*Solar radiation intensities during December, 1926*—Con.

Madison, Wis.

Date	Sun's zenith distance: 8 a.m.	78.7°	75.7°	70.7°	60.0°	0.0°	60.0°	70.7°	75.7°	78.7°	Noon
	75th mer. time	Air mass: A. M.					P. M.				Local mean solar time
	e.	5.0	4.0	3.0	2.0	1.0	2.0	3.0	4.0	5.0	e.
	mm.	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*mm.*
Dec. 1	1.96	------	1.18	1.31	------	------	------	------	------	------	1.52
14	0.43	1.08	1.16	1.29	------	------	------	------	------	------	0.58
15	0.51	0.92	1.12	1.23	------	------	------	1.18	------	------	0.74
24	0.74	------	------	------	------	------	------	1.25	------	------	0.58
29	0.81	1.09	1.18	1.30	------	------	------	------	------	------	1.19
30	2.16	0.79	0.90	1.03	------	------	------	------	------	------	3.30
Means	------	**0.97**	**1.11**	**1.23**	------	------	------	**1.22**	------	------	------
Departures	------	**+0.01**	**+0.01**	**+0.01**	------	------	------	**−0.06**	------	------	------

Lincoln, Nebr.

Dec. 13	0.74	------	------	------	------	------	------	1.30	1.18	1.08	0.56
14	0.51	1.11	1.20	1.34	1.49	1.66	------	1.30	------	------	0.64
20	3.63	0.81	0.94	1.18	------	------	------	------	------	------	3.81
25	1.88	------	1.15	1.27	------	1.56	------	------	1.17	1.06	2.62
28	2.26	------	------	------	------	------	------	1.24	1.12	0.99	2.36
29	2.16	------	0.98	1.11	------	------	------	------	0.97	0.86	3.30
30	2.74	1.04	1.16	1.30	------	1.57	------	------	1.16	1.02	3.63
Means	------	**0.99**	**1.09**	**1.24**	**1.49**	**1.60**	------	**1.28**	**1.12**	**1.00**	------
Departures	------	**+0.05**	**+0.03**	**+0.01**	**+0.11**	------	------	**+0.07**	**+0.04**	**+0.03**	------

TABLE 2.—*Solar and sky radiation received on a horizontal surface*

[Gram-calories per square centimeter of horizontal surface]

Week beginning—	Average daily radiation: Washington	Madison	Lincoln	Chicago	New York	Average daily departure from normal: Washington	Madison	Lincoln
1926	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*	*cal.*
Dec. 3	98	92	105	38	99	−48	−29	−71
10	118	123	183	93	78	−25	± 0	+11
17	115	78	141	57	105	−28	−49	−33
24*	116	128	190	67	85	−30	−4	+12
Deficiency at end of year						−2,135	−2,594	−3,908

* 8-day mean.

551.506 (261.1)

WEATHER OF NORTH AMERICA AND ADJACENT OCEANS

NORTH ATLANTIC OCEAN

By F. A. YOUNG

There was a great difference in the weather conditions over the western and eastern divisions of the North Atlantic during the month, as over the western section the number of days with gales was either near or above the normal, the maximum number occurring in the 5-degree square between the 40th and 45th parallels and the 55th and 60th meridians, where they were reported on ten days. East of the 30th meridian, however, there was a sharp decline in the number; reports to date have not shown more than three gales in any one square in this region, where anticyclonic conditions were unusually prevalent.

The number of days with fog was apparently considerably below the normal over the Grand Banks and slightly above over the middle and eastern sections of the steamer lanes, while it was observed on two days in the Gulf of Mexico.

TABLE 1.—*Averages, departures, and extremes of atmospheric pressure at sea level, 8 a. m. (75th meridian), North Atlantic Ocean, December, 1926*

Stations	Average pressure	Departure [1]	Highest	Date	Lowest	Date
	Inches	*Inch*	*Inches*		*Inches*	
Julianehaab, Greenland	[2] 29.47	([3])	30.54	25th	28.71	6th.
Belle Isle, Newfoundland	29.74	+0.04	30.48	5th	28.94	20th.
Halifax	29.91	−0.07	30.46	5th	29.44	29th.
Nantucket	30.03	−0.05	30.52	5th	29.52	29th.
Hatteras	30.13	−0.01	30.56	19th	29.58	11th.
Key West	30.09	0.00	30.24	30th	29.94	12th.[4]
New Orleans	30.13	+0.01	30.46	30th	29.74	13th.
Swan Island	29.91	−0.07	30.00	30th [4]	29.80	13th.
Turks Island	30.08	+0.05	30.16	26th [4]	30.00	2d.[4]
Bermuda	30.14	−0.01	30.36	8th [4]	29.82	2d.
Horta, Azores	30.23	+0.12	30.70	3d	29.74	19th.
Lerwick, Shetland Islands	29.99	+0.27	30.96	24th	29.22	17th.
Valencia, Ireland	30.43	+0.49	30.89	24th	30.07	4th.
London	30.31	+0.29	30.70	23d	29.82	3d.

[1] From normals shown on H. O. Pilot Chart based on observations at Greenwich mean noon, or 7 a. m., 75th meridian.
[2] Mean of 22 observations—nine days missing.
[3] No normal established.
[4] And on other dates.